RULES GOVERNING MODEL AVIATION COMPETITION IN THE UNITED STATES
# Amendment Listing

<table>
<thead>
<tr>
<th>Amendment Topic</th>
<th>Publication Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Issue</td>
<td>1/1/2017</td>
<td>Publication of Competition Regulations</td>
</tr>
</tbody>
</table>
Table of Contents

1. General ......................................................................................................................... 1
2. Helpers ............................................................................................................................. 1
3. Number of Flights ............................................................................................................ 1
4. Official Flight .................................................................................................................. 1
5. Marking ............................................................................................................................ 2
6. Prohibited Area ............................................................................................................... 2
7. No Score .......................................................................................................................... 2
8. Classification ................................................................................................................... 3
9. Judging ............................................................................................................................... 4
10. Organization of the Contest .......................................................................................... 4
11. Performance of Maneuvers ........................................................................................... 4

RADIO CONTROL HELICOPTER SCALE For event 518 ......................................................... 5
1. General ............................................................................................................................. 5
2. Safety ............................................................................................................................... 5
3. Model Requirements ....................................................................................................... 6
4. Builder of Model Rule .................................................................................................... 6
5. Proof of Scale .................................................................................................................. 6
6. Static Judging ................................................................................................................... 7
7. Static Scoring .................................................................................................................. 7
8. Round Scores .................................................................................................................. 8
9. Flight Guidelines ............................................................................................................. 9
10. Scale Flight Plan ........................................................................................................... 10
11. Multi-Blade/Flybarless Bonus ....................................................................................... 12
12. Flight Scoring ............................................................................................................... 12
13. **Official Score** ................................................................................................................................. 12

**SCALE HELICOPTER JUDGE’S GUIDE** .................................................................................................. 12

14. **Static Judging Guidelines** .................................................................................................................. 12

15. **Flight Judging Guidelines** .................................................................................................................. 13

16. **Multi-Blade/Flybarless Bonus** ............................................................................................................. 14
RADIO CONTROL SCALE HELICOPTERS

1. General

1.1.

All helicopters shall be subject to safety inspection at the discretion of the contest director.

1.2.

Any helicopter judged unsafe or not flyable due to a crash may be re-inspected prior to use.

1.3.

Dangerous flying or unsportsmanlike behavior shall be grounds for disqualification.

1.4.

All helicopters will have the contestant’s AMA number affixed, which may be located at the contestant’s discretion.

2. Helpers

Each contestant may have only one (1) mechanic/caller. The helper may not act as coach; they may only announce the start and finish of each maneuver.

3. Number of Flights

Each contestant is entitled to two (2) official flights. Additional flights may be flown when time permits.

4. Official Flight

There is an official flight when the pilot is officially called, whatever the result. The flight may be repeated at the contest director’s discretion when for any unforeseen reason outside the control of the contestant; the helicopter fails to make a start, such as:

4.1.

The takeoff cannot be made within the allowed time limit due to safety reasons.
4.2.

The contestant can prove that takeoff was hindered by interference from outside.

4.3.

Judging was impossible for reasons outside the control of the contestant (helicopter engine or radio failure is not considered outside the control of the contestant).

In such cases, takeoff may be repeated immediately after the attempt, or after reporting to the CD during the same round, or with the approval of the CD after the round is completed.

5. Marking

Each maneuver may be awarded marks between zero (0) and ten (10) (including half (1/2) points) by each judge. Any maneuver not completed shall be scored zero (0).

6. Prohibited Area

There shall be an official that can observe any flight over the prohibited area (see Figure 1). An audible or visual signal shall be given to indicate such over flight. When a pilot is signaled as having overflown this area, any flight maneuvers remaining are scored zero (0) and the model must be landed as soon as possible. If the over flight occurred during a maneuver, then that maneuver shall be scored zero (0). Scores awarded to the point of the over flight shall remain. Note that the prohibited area extends to infinity.

7. No Score

Other than overflying the prohibited area, all maneuvers shall be scored. If an infringement has been made, the scores will be deleted on all cards. There shall be no score given when:

7.1.

The contestant flies a helicopter that has been flown in the same contest by another contestant.

7.2.

The contestant flies a helicopter that does not comply with the general characteristics of a radio controlled helicopter.

7.3.

The contestant does not start the helicopter in the prescribed sequence.
7.4.

The contestant does not turn the transmitter in to the impound or operates his transmitter during a round without permission.

7.5.

The contestant does not release the helicopter at the prescribed takeoff point or requires the assistance of more than one (1) helper.

7.6.

The contestant gets the transmitter from the impound before the first call and without permission.

7.7.

The contestant switches on the transmitter before the second call (start engine and adjust helicopter).

7.8.

The contestant’s helicopter exceeds eye level during the preparation period.

8. Classification

The classification for a single round is determined by normalizing the raw scores against the highest raw score for that round. Normalized score = raw score/raw high score for round X 1,000 (two (2) decimal places, i.e., XXX.XX.

8.1.

The scores for a round must be clearly posted as soon as possible after the completion of the round.

8.2.

It is recommended that raw scores be posted as soon as possible during each round.

8.3.

The final classification will be determined by the sum of all flights, except the lowest one which is cancelled. If only one (1) flight has been made, then the final classification will be obtained by this single flight. In the case of a tie within the first three (3) places, the final classification shall be determined by a fly off that should occur within one (1) hour of the normal finishing time of the contest. In the event that a fly off is not possible due to conditions outside of the contestant’s and organizer’s control, for
example, weather, then the final classification shall be determined by the ranking of the canceled scores. In the event of only a single flight or a tie still exists after using the canceled score, then the tie will stand.

9. **Judging**

It is recommended that a panel of five (5) judges be appointed for each round. The final score of each flight is obtained after discarding the highest and lowest marks for each maneuver. When less than five (5) judges are used, the marks given by all judges shall be used. The minimum number of judges to be used is three (3).

It is highly recommended that the judges are given a 20-minute break every two (2) hours. The organizer should take this into account when scheduling flights and notification of the break point should be made known to the judges and contestants.

10. **Organization of the Contest**

10.1. **Preparation Time**

10.1.1. **General**

A contestant must be called at least five (5) minutes before he is required to enter the start box. A start box two (2) meters in diameter will be provided away from the flight line, spectators, contestants, and models. When the timekeeper, with the permission of the Flight line Director, gives the signal to start the engine, the contestant is given five (5) minutes to start the engine and make last minute adjustments. The contestant may continue with preparation beyond the five (5)-minute period; however, when this occurs, the flight time will automatically begin when the preparation time ends.

11. **Performance of Maneuvers**

11.1.

A new score sheet is issued for each contestant for each round. It is recommended that only the pilot number and not his name appear on the score sheet.

11.2.

The maneuvers are executed in the order described. Every maneuver executed out of order shall be scored zero (0).
11.3.

No takeoff or landing is allowed if it is not explicitly indicated in the description of the maneuver except as provided for in 28.5.2. If such happens, the next maneuver will be scored zero (0).

11.4.

The maneuvers should be performed in a smooth flowing sequence.

11.5.

Flying maneuvers shall be flown parallel to the flightline.

11.6.

The name of each maneuver and its start and finish must be announced by the pilot or his helper. Unannounced maneuvers will not be scored. The contestant may make only one (1) attempt to execute each maneuver during a flight. No practice attempt is allowed.

11.7.

If the flight time expires before a maneuver is completed, that maneuver and any remaining will be scored zero (0), and the pilot is required to land as soon as possible. An audible or visual signal will be given to the pilot if the flight time expires.

RADIO CONTROL HELICOPTER SCALE FOR EVENT 518.

1. General

All pertinent AMA regulations (see sections entitled Sanctioned Competitions, Records, Selection of Champions, General and Scale General) shall be applicable except as specified below.

2. Safety

Safety consideration of spectators, event personnel and participants shall be of primary importance. All models shall be subject to a safety inspection at the discretion of the contest director. A model judged to be un-flyable due to a crash must be re-inspected prior to reuse. Dangerous flying or poor sportsmanship shall be grounds for disqualification. All maneuvers shall be flown in front of the dead line which extends to infinity. At no time shall the helicopter come between the pilot and the judges! Violation of these rules will be grounds for disqualification!
3. Model Requirements
There shall be no limitation on the types of equipment that can be fitted to the helicopter with exception of metal main or tail rotor blades. Each contestant shall be permitted one (1) model entry.

4. Builder of Model Rule
The builder and flier of the model helicopter shall be one and the same person. There are no team entries.

4.1. The contest director shall make every reasonable effort to assure himself that each contestant “constructed” the model used in competition. “Constructed” shall be interpreted as the action required to complete a model with no more fabrication than the usual helicopter kit.

4.2. Helicopter kits containing a large amount of prefabrication are permissible as long as the contestant completes all of the final assembly.

4.3. The contestant must be the original owner and the one who prepared the helicopter for flight, regardless of the scope of the work required to finish the helicopter.

4.4. The contestant will include in a declaration statement that he/she completed the final assembly of the subject aircraft, including and not limited to: preparing the fuselage for the mechanics, building of the mechanics, installing the radio equipment, and test flying the aircraft. The contestant shall also list which items or construction steps that he/she did not complete or fabricate.

5. Proof of Scale
Contestants shall present the following materials with the helicopter for static judging:

5.1. A published three-view or more drawings.

5.2. Pictures, published or otherwise, pertaining to color, markings, and details.
6. **Static Judging**
Static judging is to be done at the flying site when possible. The model shall be placed on an elevated or rotating table.

6.1.

The judges shall be allowed to approach the model but may not touch it.

6.2.

The contestant shall be the only person to move the model and/or open any panels or doors for the judges to inspect.

6.3.

The contestant shall have up to 5 minutes to show the judges any special features which appear on his model such as lights, or other working detail.

7. **Static Scoring**
Total 3 judges, maximum 300 points per judge gives a total 900 possible points for static. Entries shall be judged on the following items with the maximum point values listed next to each.

7.1.

Fuselage (Maximum 50 points).

7.2.

Cockpit (Maximum 50 points).

7.3.

Landing Gear (Maximum 50 points).

7.4.

Rotor Systems:

7.4.1.

Tail rotor (Maximum 10 points).

7.4.2.

Main rotor (*Maximum 40 points).
*Helicopters using a main rotor system that features a flybar to enhance flight stability will receive a maximum of fifteen (15) points unless their system replicates the full size helicopter.

7.5.

Craftsmanship (Maximum 50 points).

7.6.

Finish & Markings (Maximum 50 points).

8. **Round Scores**

   All rounds are normalized to 1000 points. This is determined by normalizing the raw scores against the highest score for that round. Normalized score = raw score/high score for round X 1,000 (two (2) decimal places, i.e., XXX.XX.

8.1.

The scores for a round must be clearly posted as soon as possible after the completion of the round.

8.2.

It is recommended that raw scores be posted as soon as possible during each round.

8.3.

The final score will be the normalized sum of all flights, except the lowest one which is cancelled, PLUS the normalized static score.

Example: Pilot A scores a normalized 993.1 for flight 1, 835.0 for flight 2 and 901.0 for flight 3. His total is 2729.1. Pilot B has a 951 for flight 1, a 1000 for flight 2 and a 1000 for flight 3. His total is 2951.00. The 2951 is the highest total points for the 3 rounds, so pilot A’s total is divided by Pilot A’s total to give his final normalized flight score. In this way each pilot’s total score is divided by Pilot B’s total score since it was the highest total. This gives each pilot a normalized final flight score. This score is then added to their normalized static scale score to yield a final score for the contest.

If only one (1) flight has been made, then the score will be obtained by this single flight. In the case of a tie within the first three (3) places, the final score shall be determined by a fly off that should occur within one (1) hour of the normal
finishing time of the contest. In the event that a fly off is not possible due to conditions outside of the contestant’s and organizer’s control, for example, weather, then the final score shall be determined by the ranking of the canceled scores. In the event of only a single flight or a tie still exists after using the canceled score, then the tie will stand.

9. Flight Guidelines
The contest layout area will be the same used for AMA events 431, 432, and 433 with the pilot located behind a line seven (7) meters from the center of the scale (S) helipad. See Figure 1.

9.1.

The scale (S) helipad shall be a 1.2-meter circle, and all flights shall commence and end at the (S) helipad.

9.2.

The pilot shall stand behind a line seven (7) meters from the center of the scale (S) helipad. The pilot shall stand in this position during the entire flight.

9.3.

Each contestant is allowed 3 minutes in which to start their model, transport it to the scale (S) helipad, and test hover or perform adjustments as required. The contestant shall wait until the preceding competitor has
completed their flight and shut down their model prior to starting and beginning the start time interval. Test hovering shall be done from the scale (S) helipad. The helicopter may only be hovered up to eye level, without practicing maneuvers, and the model must not be rotated beyond 90 degrees left or right relative to the pilot. If the contestant is not ready after the 3 minute start time interval, they are allowed to complete their adjustments; however, their flight time will have started at the end of the 3 minute interval.

9.4.

All models shall be carried from the start circle to the scale (S) helipad. Models shall not be flown from the helipad to the pit area.

9.5.

Once the contestant or his caller has announced the start of his flight, he is not allowed to make any adjustments to the helicopter. Engine restarts after the flight has commenced are not allowed.

9.6.

The maneuvers shall be flown in proper sequence and away from the spectators. The maximum flying time is six (6) minutes beginning when the first maneuver is announced.

9.7.

A flight shall be considered an official attempt once the contestant or his caller has indicated the flight has begun. All contestants must have at least two (2) official attempts to have their static score counted.

9.8.

All contestants shall be permitted to fly as many equal rounds as time allows or as directed by the contest director.

9.9.

Contestants shall fly the same equipment that which was static judged. Should part of the aircraft be damaged so as to be replaced, that portion of the helicopter shall be re-judged.

10. Scale Flight Plan

10.1.

Ten (10)-Second Hover with Clearing Turns (Maximum 15 points).
10.2.

45-degree Climb Out to a minimum of eight (8) meters. (Maximum 5 points).

10.3. **Translational Landing**

Minimum altitude of eight (8) meters the helicopter will begin a translational straight-line descent or autorotation to a soft landing on the helipad. (Maximum 10 points).

*Autorotation Option: Should a contestant wish to end his flight with a autorotation maneuver he may substitute it for the Translational Landing for a possible fifteen (15) point bonus. (Maximum 25 points).

10.4.

Scale Freestyle (Maximum 70 points).
10.5. **Auto Rotation Option**

Should a contestant wish to end his/her freestyle flight with an auto rotation maneuver to the scale helipad, he/she may do so for a potential bonus of up to 15 points.

11. **Multi-Blade/Flybarless Bonus**

Helicopters flying with a multi-bladed or flybarless rotor head that is “scale to their particular machine” will receive a fifty (50) point bonus added to each round’s score. “Scale to their particular machine” shall be interpreted as a rotor head that matches the number of blades and flybar arrangement (if any) fitted to the full scale prototype.

12. **Flight Scoring**

Each round’s flight score shall be the sum of the scores from the three judges. Maximum 100 points per judge totals 300 possible points per flying round plus any Autorotation and/or Multi-Blade/Flybarless Bonuses.

13. **Official Score**

The final score shall be the sum of the best two flight scores plus the static score. Maximum 1600 possible points (1630 with flying bonuses). In the unlikely event of a tie, the tie breaker shall be the highest single flying round score between the tied contestants.

**SCALE HELICOPTER JUDGE’S GUIDE**

14. **Static Judging Guidelines**

14.1. **Fuselage**

Outline compared to three-views and documentation, panel lines, and rivets. Must provide documentation for maximum score. (Maximum 50 points.)

14.2. **Cockpit**

Seats, belts, controls, instruments, consoles, map pockets, flooring, interior paint, etc. Match documentation for maximum score. (Maximum 50 points - Automatic zero for no cockpit.)

14.3. **Landing Gear**

Scale-like landing gear (skids or retracts). Match documentation for maximum score. (Maximum 50 points.)
14.4. **Rotor Systems**

14.4.1. Tail rotor systems including blades. Match documentation for maximum score. (Maximum 10 points.)

14.4.2. Main rotor system including blades. Match documentation for maximum score. (*Maximum 40 points.)

*Helicopters using a main rotor system that features a flybar to enhance flight stability will receive a maximum of fifteen (15) points unless their system replicates the full-size helicopter.

14.5. **Craftsmanship**

Items added or modifications made to enhance the scale appearance of the helicopter. These items may be handmade, or obtained separately and could include; lighting systems, aerials and antennas, non-skid surfaces, latches, handles, opening doors and hatches, interior detail, tie downs, etc. Match documentation for maximum score. (Maximum 50 points.)

14.6. **Finish and Markings**

Painting and nomenclature. Paint scheme should reflect actual paint used. Nomenclature could include registration numbers or maintenance and armament markings. Match documentation for maximum score (Maximum 50 points).

15. **Flight Judging Guidelines**

15.1. **10-Second Hover with Clearing Turns**

Lift off smoothly with the tail towards the pilot and hover stationary at eye level over the pad for a minimum of ten (10) seconds followed by a 90-degree Clearing Turn either to the left or right, hover for five (5) seconds, followed by a 180-degree turn in the opposite direction, hover for five (5) seconds. Subtract points for; incorrect hover altitude, hovering less than the minimum time, non-completion of clearing turns, erratic movements. (Maximum 15 points.)

15.2. **45-Degree Climb Out**

Following the final Clearing Turn the model shall perform a 45-degree Climb Out to a minimum of 8 meters. The pilot should perform the Climb Out so that the Judges have a good view of the model's angle of climb and altitude. Subtract points for; wrong degree of climb out, wrong altitude, erratic movements. (Maximum 5 points.)
15.3. **Scale Freestyle**

Scale Freestyle flight shall commence at the scale (S) helipad. The main objective is to demonstrate the flight capabilities & functions of the actual full-size helicopter, and all maneuvers should replicate the type of helicopter being flown. The pilot shall provide each judge with a description of his maneuvers. The flight duration shall be a minimum of two (2) minutes, not to exceed four (4) minutes. Scoring will be based on smoothness, precision, realistic speed, and judges’ impression of the overall presentation. Subtract for erratic movements, non-scale maneuvers, non-scale speed, falling outside time constraints. The judges will award 50 points for technical merit in performing the maneuvers and 20 points for artistic merit for presenting a sequence of maneuvers which flows nicely and makes for a pleasing demonstration of the models performance (Maximum 70 points).

15.4. **Translational Landing**

Following the Climb Out and at a minimum altitude of eight (8) meters the helicopter will begin a translational straight-line descent to a soft landing on the helipad. Maximum score is achieved when the touchdown is preceded by a minimum duration/altitude hover. Subtract for incorrect starting altitude, erratic movements, rough landing, or missing the helipad. (Maximum 10 points.)

Should a contestant wish to end his/her flight with an auto rotation for a possible 15-point bonus, his/her caller must alert the judges to his intentions prior to starting the auto rotation. The maneuver must be performed from a minimum starting height of 8 meters and the engine must be switched off at the start of the maneuver. The engine may be left running if the entrant desires but for a reduced score. Lose marks for incorrect starting altitude, erratic descent, rough landing or missing the helipad.

Maximum engine off bonus 15 points. Maximum engine running bonus 5 points. The bonus is in addition to the Freestyle score.

16. **Multi-Blade/Flybarless Bonus**

Helicopters flying with a multi-bladed or flybarless rotor head that is “scale to their particular machine” will receive a fifty (50)-point bonus added to each round’s score. “Scale to their particular machine” shall be interpreted as a rotor head that matches the number of blades and flybar arrangement (if any) fitted to the full scale prototype.